aggregates contaminate a reaction cell, to thereby give not a little influence on the results of the assay on other biochemical items being simultaneously assayed.

The automatic method for assaying cholesterol in HDL may apply known photometry that may be selected from 2-points end method, a rate method, a double rate method, a fix time method and the like, so that the assay can be performed in a turbid state. However, even with these photometric methods, the assay in the turbid state causes a problem on accuracy of assay when a certain change in turbidity is caused during the reaction. If a reaction solution is turbid, the reproducibility becomes decrease. Therefore, limitation is posed on specimens to be assayed, wide assay wavelength ranges cannot be used, or specimens from various patients cannot be served. For example, a disadvantage may be appeared that at around 340 nm (in short wavelength range), the absorbance becomes 2 to 3 or more due to the turbidity phenomenon by the aggregates, thereby often exceeding over the allowable range in the analyzer.

The technology disclosed in Laid-open Japanese Patent Publication No. Hei 9-96637 that never use divalent cation, is a method by adding lipoprotein and an antiserum agglutinating therewith. Said method also forms antigen antibody aggregates that will cause the turbidity, resulting in the contamination of the reaction cell. Therefore, the aggregates contaminate the reaction cell, to thereby give not a little influence on data of the assay in other biochemical items being simultaneously assayed. Further, since the turbidity in the reaction solution increases, an accurate

assay of the cholesterol in HDL particularly by photometry in a short wavelength region for the same reason as mentioned above.

These technologies are made up of contriving a common technology of preventing enzymatic reactions and a photometry by forming complexes or aggregates and the adverse influence that the turbidity inherently has, cannot be solved. The technology that finally eliminates such turbidity includes one of countermeasures for turbidity. As disclosed in Laid-open Japanese Patent Publication No. Hei 6-242110, addition of the operation for finally eliminating turbidity may give rise to accurate measured data. However, this method requires at least 3 or 4 steps of divided reagent dispensing operation. Although the commercially available automatic analyzers include those that can cope with a 3 or 4-step of divided reagent dispensing operation, generally prevailing automatic analyzers for biochemical items mostly cope with at most 2-step reagent dispensing operation, so that the method could not be applied in a certain case.

On the other hand, the assay of the cholesterol in LDL is in such a position that the above-mentioned calculation method must be used even at present. Recentry, methods for assaying the cholesterol in LDL addressed to full automation has been reported such technologies as disclosed in Laid-open Japanese Patent Publication No. Hei 07-280812, WO96/29599, and Laid-open Japanese Patent publication No. Hei 09-313200. These techniques reside in the extension of the technology which involves formation of aggregates or complexes, thus, the control of turbidity upon the

assay is a problem to be solved in future.

SUMMARY OF THE INVENTION

An object of the present invention is to provide a method for assaying a specific component in a lipoprotein fraction in the serum by an enzymatic reaction, which comprises quantitating a component in lipoprotein contained in a biological sample, such as, HDL (high-density lipoprotein), LDL (low-density lipoprotein), VLDL (very low-density lipoprotein) and the like, by using a commonly employed automatic analyzer without centrifuging operation or forming turbid in the reaction solution due to complexes or aggregates upon the treatment.

The present invention provides a method for assaying a component in a specific lipoprotein fraction in a serum by an enzymatic reaction, comprising introducing a means for controlling the reactivity of an enzyme acting on a component in the lipoprotein fraction, thereby specifically assaying the component. The means for controlling the reactivity of the enzyme acting on the specific component in the lipoprotein fraction includes adding a substance that controls the ion strength of the enzymatic reaction solution, selecting a nonionic surfactant, and/or using a selected enzyme having reaction specificity to the specific lipoprotein.

The present invention provides a method for assaying a component in HDL, a method for assaying a component in LDL, and/or a method for assaying a component in VLDL, by appropriately selecting the above three means and utilizing singly or in combination.